

→ POLINSAR 2013

The 6th International Workshop on Science and Applications of SAR Polarimetry and Polarimetric Interferometry

Methods and Theoretical Modeling

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Seed question 1: What is in the future for Compact Polarimetry?

(NB, carried over from 2009 and 2011)

From 2011

Themes arising (abstracted)

- >... CP is here already
- >... Continuing need for quantitative application-specific FP vs CP comparisons
- >... 2x2 vs 3x3 covariance matrix formalism

Recommendations (from 2009, abstracted)

- >... Establish a unified theoretical basis for CP Pol-InSAR, in the same fashion as the founding basis for (quad-pol) Pol-InSAR
- >... “Require” multi-PI objective quantitative comparisons of CP vs MP, DP, and FP for all Super Sites
- >... Work system-engineering analyses of CP issues (e.g., required dynamic range, pros and cons of self-calibration, cross-talk, ambiguity levels vis-à-vis H&V quad-pol, etc.)

2011 Recommendations

Progress on the 2nd point, but all three remain outstanding following POLinSAR 2011

Seed question 2: What are the challenges for models & interpretive tools?

(NB, carried over from 2011)

From 2011

Themes arising (abstracted)

- >...Much remains to be done
- >...Non-reciprocal case ($S_{hv} \neq S_{vh}$)
- >...Fine-resolution systems (e.g., texture of scene vs speckle)

Recommendations (abstracted)

- >... Consider extending the texture model to the polarimetric case, which by implication means that a significantly different texture parameter should obtain for each polarimetric channel.
- >... Focus on model-based decomposition by developing new approaches based on application-specific physics (biomass + topography for example).
- >... Logarithmic transformations to simplify and enrich decomposition and segmentation analyses deserves further investigation.
- > ... Initiative to make software tools “open source”: creative and deserves encouragement, replication,...and independent validation.

Seed question 3: What extended or new models and techniques will be required to accommodate data from higher-capability systems, especially those having finer spatial resolution or bistatic geometry?

(NB, carried over from 2011)

From 2011

Themes arising (abstracted)

- >...Impact of resolution and additive noise
- >...Bistatic configurations

Recommendations (abstracted)

- >...Filters developed and in use by particular investigators should be considered as “beta tools” as part of POLSARPRO, and once validated, integrated into operational analysis packages
- >... Release selected bistatic data (e.g. TanDem-X) to the community to encourage development of bistatic interpretation tools.